

**Claims:**

1. A module for arbitrary configuring/reconfiguring topology of optical networks, comprising:

- at least one optical switching device connectable to an optical network and
- a plurality of network elements connectable to said at least one optical switching device;

wherein said at least one optical switching device is controllable to selectively connect thereto and disconnect therefrom one or more of said elements for switching them in or off the network.

2. The module according to Claim 1, being a pre-manufactured module suitable for insertion into the optical network.

3. The module according to Claim 1, wherein the elements are connectable to the switching devices so that each of the elements can be either switched in the network, or bypassed.

4. The module according to Claim 1, wherein the elements connectable to said at least one optical switching device are selected from the following non-exhaustive list comprising optical and electro-optical components: amplifier, filter, multiplexer/demultiplexer (MUX-DEMUX), OADM (optical add-drop multiplexer), delay line, converting means, dispersion compensating device, additional optical switching device.

5. The module according to Claim 1, comprising the optical switching devices selected from the following non-exhaustive list including: 1x2 optical bypass switches, 2x2 optical bypass switches, optical switching matrices  $n \times m$ , wherein any of the optical switching devices is connectable to at least one of the network elements and capable of

selectively setting each of the elements in one of two modes being a working mode and a bypass mode.

6. A reconfigurable network node comprising the module according to Claim 1.

7. A method of configuring/reconfiguring an optical network by:  
switching the module according to Claim 1 into a portion of the optical network,

selecting one or more of the module's network elements to be introduced in the network according to a required configuration and considering the remaining network elements as non-selected,

forming connections in the module by controlling said at least one optical switching device to set the non-selected elements in the bypass mode and the selected elements in the working mode according to the required configuration.

8. The method of Claim 7, wherein the step of switching the module into the network is provided when upgrading is required.

9. The method according to Claim 7, wherein the step of switching the module into the network is performed in advance, simultaneously with establishing the network.

10. The method according to Claim 9, wherein the step of switching the module into the network comprises pre-installing the module into a network node thereby rendering said node reconfigurable.

11. The method according to Claim 7, wherein the step of forming the connections is performed in a hitless manner.